

REMARKS

Claims 1-21 were examined. Claims 1 and 12 are amended. Claims 1-21 remain in the Application.

The Patent Office rejects claims 1, 6, 9, 11-12, 19 and 21 are rejected under 35 U.S.C. §102(e). Claims 2-4, 7-8, 10, 13-15, 17-18 and 20 are rejected under 35 U.S.C. §103(a). Reconsideration of the pending claims is respectfully requested in view of the above amendments and the following remarks.

A. 35 U.S.C. §102(e): Rejection of Claims 1, 6, 9, 11-12, 19 & 21

The Patent Office rejects claims 1, 6, 9, 11-12, 19 and 21 under 35 U.S.C. §102(e) as anticipated by U.S. Patent Publication No. 2002/0181072 of Cook (Cook). Cook discloses a single crystal photoreactive material of doped lithium niobate (LiNbO_3) in an optical body and a method involving photoreactive material including a first material such as doped lithium niobate in a couplant material comprising a glass or polymer.

Claims 1, 6, 9 and 11 are not anticipated by Cook, because Cook does not describe heating a ferroelectric polymer material; aligning a plurality of domains of the heated polymer material; and cooling a temperature of the polymer material while maintaining the alignment of the domains of the polymer material. Cook describes aligning doped lithium niobate particles. Lithium niobate is not a ferroelectric polymer material. Further, Cook does not describe aligning a plurality of domains of a ferroelectric polymer material. Cook aligns lithium niobate. In an embodiment, lithium niobate is combined with a couplant material that may be a polymer. Nevertheless, it is the lithium niobate, not the polymer material that is aligned.

Claims 12, 19 and 21 are not anticipated by Cook, because Cook does not describe heating a polymer material; applying an electric field to the heated polymer material to align a plurality of domains of the polymer material in a direction relative to a surface of the substrate; and cooling the temperature of the polymer material while maintaining application of the electric field to the polymer material. As noted above, Cook discloses aligning doped lithium niobate, not a ferroelectric polymer material.

For the above stated reasons, Applicants respectfully request that the Patent Office withdraw the rejection to claims 1, 6, 9, 11-12, 19 and 21 under 35 U.S.C. § 102(e).

B. 35 U.S.C. § 103(a): Rejection of Claims 2, 4, 7-8, 13, 15, 17 & 18

The Patent Office rejects claims 2, 4, 7-8, 13, 15, 17 and 18 under 35 U.S.C. § 103(a) as obvious over Cook in view of U.S. Patent No. 3,490,050 of Weiner (Weiner). Weiner is cited for disclosing an apparatus to use an electric field to align particles.

Claims 2, 4, 7 and 8 depend from claim 1 and claims 13, 15, 17 and 18 depend from claim 12. As noted above with respect to independent claim 1 and independent claim 12, Cook does not disclose a method involving a ferroelectric polymer material wherein the polymer material is heated to align a plurality of domains of the polymer material. Weiner does not cure the defects of Cook. Accordingly, claims 2, 4, 7-8, 13, 15, 17 and 18 are not obvious under 35 U.S.C. § 103(a) over Cook in view of Weiner.

C. 35 U.S.C. § 103(a): Rejection of Claims 3, 10, 14 & 20

The Patent Office rejects claims 3, 10, 14 and 20 under 35 U.S.C. § 103(a) as obvious over Cook in view of U.S. Patent Publication No. 2004/0131862 of Szmanda et al. (Szmanda). Szmanda is cited for disclosing a polymer material comprising poly(vinylidene fluoride-trifluoroethylene).

Claims 3 and 10 depend from claim 1 and claims 14 and 20 depend from claim 12. As noted above with respect to claims 1 and 12, Cook does not disclose a method involving heating a ferroelectric polymer material and aligning a plurality of domain of the heated polymer material. Instead, Cook teaches a doped lithium niobate material. Cook recognizes polymer-based materials. See paragraph [0034]. Nevertheless, Cook prefers doped lithium niobate materials presumably because a high voltage electric field can be developed. See paragraph [0084]. Therefore, Cook teaches away from using ferroelectric polymer materials. Accordingly, there is no motivation to combine Cook and Szmanda to substitute a ferroelectric polymer material such as poly(vinylidene fluoride-trifluoroethylene) for the doped lithium niobate material of Cook.

For the above stated reasons, Applicants respectfully request that the Patent Office withdraw the rejection to claims 3, 10, 14 and 20.

CONCLUSION

In view of the foregoing, it is believed that all claims now pending patentably define the subject invention over the prior art of record and are in condition for allowance and such action is earnestly solicited at the earliest possible date.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly extension of time fees.

Respectfully submitted,

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